Chapter 8

Tenacious goal pursuit and flexible goal adjustment scales: a validation study

Resubmitted

Inge Henselmans
Joke Fleer
Eric van Sonderen
Ans Smink
Robbert Sanderman
Adelita V. Ranchor

Health Psychology Section, Department of Health Sciences, Section Health Psychology, University Medical Center Groningen, University of Groningen, The Netherlands

Summary

Objective & Methods. The flexible goal adjustment (FGA) and tenacious goal pursuit (TGP) scales are used regularly in aging and developmental research. The current study examined their validity in a sample of 517 women (30-75 years) in multiple ways.

Results & Conclusions. Overall, the findings show that the scales do not clearly distinguish between FGA and TGP. The direction in which the items were formulated was just as important as what was being measured. Moreover, face validity of particularly the reverse coded items appeared to be weak. The authors recommend a revision of the concept definitions as well as of the items.

Numbering of assessments in this chapter compared to numbering in original design (Figure 1.1)

Chapter 8	T1
Original design	T3

Acknowledgement: The authors wish to express their gratitude to Anne Boomsma and Roy Stewart for their statistical advice on earlier drafts of this chapter, and to Karen van der Ploeg, Merlijne Jaspers, Eveline Snippe, Marike Schokker, Jelte Bouma, Ans Smink, Sijrike van der Mei, Torben Schulz and Gemma Maters for their help in examining face validity.

8.1 Introduction

When growing older, people face many and mostly irreversible losses, such as the loss of function and social roles. Seemingly contradictory, people generally maintain a sense of control, self-esteem and well-being in old age (Fung, Abeles, & Carstensen, 1999; Baltes & Baltes, 1986; Rodin, 1986). The dual process theory of self-regulation (Brandtstädter & Renner, 1990) offers an explanation for this 'well-being paradox' (Poulin, Haase, & Heckhausen, 2005) by assuming a shift from assimilative to accommodative coping strategies when growing older. *Assimilative* coping implies aiming to reach a goal despite difficulties by trying harder or by looking for alternative means. *Accommodative coping* entails changing the desired state by changing the valence assigned to a goal or by looking for an alternative goal. In uncontrollable conditions or when achievement probability is low, assimilative coping strategies can be problematic, as these consume scarce resources and can lead to experiences of failure (Rothermund, 2006). In contrast, accommodative strategies gain in importance under such conditions, as these draw attention away from things in life one can not do or reach any longer.

In 1990, a self-report instrument was introduced to assess the individual's general tendency to use assimilative and accommodative coping strategies, named the *tenacious goal pursuit* (TGP) and *flexible goal adjustment* (FGA) scales (Brandtstädter & Renner, 1990). Since its development, the instrument has been used regularly in studies on coping with blocked goals due to aging (Heyl, Wahl, & Mollenkopf, 2007; Frazier, Newman, & Jaccard, 2007; Poderico, Ruggiero, Iachini, & Iavarone, 2006; Boerner, 2004; Rothermund & Brandtstädter, 2003; Slangen-de Kort, Midden, Aarts, & van Wagenberg, 2001). The current brief report addresses the validity of the instrument, as only a few researchers explicitly examined if the scales meet their measurement intent (Mueller & Kim, 2004; Heckhausen, 1997),

Empirical findings

A number of studies that made use of the scales provided support for the premises of the dual process theory. As theorized, both coping tendencies were positively related to various measures of psychological well-being (Heyl et al., 2007; Wahl, Becker, Schilling, Burmedi, & Himmelsbach, 2005; Boerner, 2004; Brandtstädter & Renner, 1990). Moreover, in line with theory, only flexible goal adjustment was shown to mitigate the negative effect of unattained developmental goals (Brandtstädter & Renner, 1990) and of various health problems (Heyl et al., 2007; Boerner, 2004; Schmitz, Saile, & Nilges, 1996). Supporting the theorized shift in coping modes, recent studies showed that the negative effects of aging are offset by an increase in flexible goal adjustment at old age (Frazier et al., 2007; Rothermund & Brandtstädter, 2003).

However, not all findings are in line with theory. Inconsistent results are reported regarding the central premise of the dual process theory, i.e. the opposite

relation of the two coping tendencies with age (Heyl et al., 2007; Poderico et al., 2006; 2004; Boerner, 2004; Heckhausen, 1997; Brandtstädter & Rothermund, 1994; Brandtstädter, Wentura, & Greve, 1993; Brandtstädter & Renner, 1990). Moreover, findings regarding the interaction between flexible goal adjustment and tenacious goal pursuit differ. Some authors conclude that people with high scores on both tendencies are particularly well off, as after flexible goal disengagement, new goals need to be pursued tenaciously (Heyl et al., 2007; Preiser, Auth, & Buttkewitz, 2005). On the opposite, Bak & Brandtstädter (Bak & Brandtstädter, 1998) concluded that high scores on both scales seem to be maladaptive, possibly because people who tend to use both strategies struggle with a regulatory dilemma, i.e., choosing between holding on and letting go.

In sum, the rationale of the dual-process theory is attractive and it's predictive utility seems promising. However, to interpret sometimes inconsistent findings in empirical studies with more certainty and to further test the theory's premises, a valid instrument is required.

The instrument

Besides the original 1990 paper, not many papers addressed the psychometric properties of the instrument in detail. Generally, only reliability was reported, which was consistently strong for both scales (ranging between .70 and .80). Yet, strong internal consistency is a necessary, but not sufficient condition for validity. Thus far, only Mueller and Kim (Mueller & Kim, 2004) tested the validity of the 30 item questionnaire in detail. They concluded that the English version did not fully support the measurement intent and that item keying, i.e., the direction in which items are formulated, explained more of the variance in scores than did the two coping constructs. Similarly, Heckhausen noticed that the original German version of TGP scale is comprised of two subscales, i.e. one with positively phrased and one with negatively phrased items (Poulin et al., 2005; Heckhausen, 1997). The current brief report addresses the validity and the apparent role of item keying in more detail.

Although the way people cope with disrupted goals is most frequently addressed in aging studies, goal-related coping might play a similar important role in the adjustment to sudden and non-normative life events (Van Damme, Crombez, Goubert, & Eccleston, 2009; Wrosch & Freund, 2001). For this reason, we included the scales in our study on psychological adjustment to breast cancer. In this study, a large reference group of women (30-75 years) who were tested, but turned out not have breast cancer completed the FGA and TGP scales. The data of this sample were used to assess the validity of the instrument.

First of all, we ran a confirmatory factor analysis to test the *factorial validity* of the instrument. We examined three models, i.e. (1) a model assuming only one coping dimension with flexibility and tenacity at opposite poles, (2) a model with the original two orthogonal coping factors, and (3) a model with two keying factors (direct and reverse). Factorial validity would be supported if (1a) the

original model with two coping styles shows a good fit, if (1b) this model fits better than the first model assuming only one coping dimension and also better than the two factor model based on item keying, and if (1c) the loadings on the two coping factors are higher than the loadings on the two keying factors. Second, we examined *convergent* and *divergent validity* in a multitrait, multimethod matrix (Campbell & Fiske, 1959). The two different methods used to assess the coping tendencies were compared, i.e. the direct coded items with the reverse coded items. Convergent validity would be supported if (2a) the direct and reverse coded items of the same coping style are strongly related (one construct, different methods). Divergent validity would be supported if (2b) these correlations are stronger than the correlations between the FGA and TGP items measured with items of similar keying (two constructs, similar method). Third, we examined the *face validity* of the items by asking psychology researchers to classify the items. Face validity, the judgement of experts whether the items seem to measure what they are supposed to measure (Streiner & Norman, 2008, page 6), would be established (3) if the expert raters are able to distinguish FGA items from TGP items with sufficient certainty. Together, these three approaches will give more insight in the validity of the instrument designed to assess assimilative tenacity and accommodative flexibility.

8.2 Methods

Sample

Six hospitals in the Northern part of the Netherlands were involved in the recruitment of respondents. Women aged 75 or younger, who were referred to the hospital by their GP for diagnostic tests upon suspicion of breast cancer were invited by mail to participate in the study. When no lump was found or when the lump turned out to be benign, eligible women were included in the reference group. The current study reports on data of this group only.

A total of 3093 women were invited to the study before diagnosis, of whom 1226 gave informed consent, of whom 1094 were eligible. Of these 1094 women, 912 women confirmed their initial consent after diagnosis, of whom 670 did not have cancer (no or a benign abnormality). This paper reports on the assessment at about 6-8 weeks after diagnosis. A total of 517 women completed all items of the coping questionnaire at this point in time.

Instrument

The instrument assessing the tendency to use *tenacious goal pursuit* (TGP) and *flexible goal adjustment* (FGA) when faced with goal disruption (Brandtstädter & Renner, 1990) is comprised of two scales of 15 items each (Table 4). Respondents rate the degree to which they agree with each statement on a five-point Likert scale ranging from '*fully disagree*' to '*fully agree*'. The TGP scale consists of 6 direct keyed and 9 reverse keyed items; the FGA scale consists of 11 direct keyed

and 4 reverse keyed. Two bilingual persons independently translated the original German items into Dutch and then compared the two versions together with one of the researchers. Differences between the versions were resolved and the resulting Dutch version was checked on fluency and comprehensibility by three independent Dutch-speaking persons (Werner & Campbell, 1970, the parallel blind technique). The Cronbach alphas of the coping scales indicated acceptable internal consistency of both 15-item scales (TGP = .75; FGA = .83), in line with other reports.

Analyses

First, the factor structure of the coping questionnaire was tested by means of Confirmatory Factor Analysis (CFA) using LISREL version 8.51. As the multivariate normality assumption was not met, we applied the Robust Maximum Likelihood estimation method. Three models were tested; correlations between factors were allowed. In line with common recommendations (Diamantopoulos & Siguaw, 2000), several indexes were used simultaneously to assess model fit: the Satorra-Bentler Chi-square as an index of exact fit, the Root Mean Square Error of Approximation as an index of close fit, the Comparative Fit Index as an index of fit compared to the 'null-model' and the Standardized Root Mean Square Residuals as an index of the size of the residuals. Moreover, the completely standardized factor loadings in model 2 and 3, which indicate the correlation between the item scores and the underlying factor, were compared.

Second, a multitrait multimethod matrix was generated with Pearson correlations between the sum scores on the 11 direct keyed FGA items, the 4 reverse keyed FGA items, the 6 direct keyed TGP items and the 9 reverse keyed TGP items.

Third, face validity was assessed by asking 10 co-workers (with on average 11 years of psychology education or research experience, range 5-40 years) to evaluate the items. In the original text on the development of the scales, it was stated that (Brandtstädter & Renner, 1990) 'One group of items indicated *a tendency to tenaciously pursue goals even in the face of obstacles and under high risk of failure (or, at the opposite pole, the tendency to give up readily)*. According to our formulation, this tendency corresponds to an assimilative mode of coping or control. A second group of items indicated a *tendency to positively reinterpret initially aversive situations and to relinquish blocked goal perspectives easily (or, at the opposite pole, difficulty or reluctance in withdrawing emotionally from barren commitments)*. This tendency obviously corresponds to an accommodative coping style.' The phrases in italic were presented to the raters, both in Dutch as well as in English. They were asked to classify each item to belong to either FGA or TGP (or their opposites). Moreover, for each item, they were asked how certain they were of their classification on a 10-point scale from 'pure guess' (1) to '100% sure' (10). Only correct classifications of sufficient certainty (6 or higher) were considered as support for face validity. Ratings with a certainty of 5 or lower were considered too uncertain to take into account.

Table 8.1 *Fit indices of three CFA models*

	df	SB X^2 (p)	RMSEA	CFI	SRMR
Model 1: 1 factor	405	2245.53 (.00)	0.09	0.46	0.12
Model 2: 2 target factors	404	1625.08 (.00)	0.08	0.55	0.12
Model 3: 2 keying factors	404	1551.92 (.00)	0.07	0.58	0.11

RMSEA: < .05 good fit, .05 to .08 reasonable fit, .08 to .10 mediocre fit, > 0.10 poor fit ; CFI: > 95% acceptable fit. SRSM: < .08 acceptable fit

8.3 Results

Sample characteristics
The 517 respondents were on average 50 years old (SD = 10, range 30-75) and finished either basic/lower (43%), intermediate professional (31%) or higher professional/academic education (26%).

Factorial composition
Table 8.1 shows the fit indices of the three tested CFA models. Model 1, assuming one underlying coping dimension, did not fit well, i.e., RMSEA indicated mediocre fit and the CFI and SRMR were not within the acceptable range. The original model 2 fitted somewhat better, i.e., Chi square was lower, RMSEA indicated just reasonable fit and the CFI was somewhat higher. Lastly, model 3, with two factors based on item keying, fitted even somewhat better than the original model. Yet, CFI and SRMR in neither 2 nor in model 3 were within the acceptable range. We examined differences in item's factor loadings (Table 8.2) on the coping (model 2) and the keying factors (model 3). Most items loaded just as strongly on the coping factors as on the keying factors. The direction in which the items were formulated explained a similar percentage of variance in the item scores (mean FGA 31%, mean TGP 19%) as the coping content of the items (mean direct 28%, mean reverse 22%).

Convergent and divergent validity
The MTMM matrix (Table 8.3) shows that the correlations between the direct and reverse coded items of the same coping style (in bold font) were moderate (TGP) or strong (FGA). The correlations between item sets of similar keying (in italics) were however equal to (FGA direct with TGP direct) or even slightly higher (FGA reverse with TGP reverse) than the correlations between sets of items representing the same coping style (in bold font).

Face validity
The 'best' and the 'worst' rater classified respectively 24 and 14 items correctly with sufficient certainty. The 11 direct coded FGA items were generally easy to categorize (Table 8.2), although several raters were uncertain about item 19, 23

Table 8.2 *Factor loadings in model 2 and 3, number of uncertain and certain (correct and incorrect) classifications by 10 raters*

			Factor loadings CFA				Face validity		
No.		Scale	Model 2		Model 3		uncertain	certain	
			FGA	TGP	-	+		correct	incorrect
04	I find it easy to see something positive (..) serious mishap.	FGA	.64			.70	0	9	1
08	When (..) wrong, I can usually find a bright side in a situation.	FGA	.65			.73	1	9	0
15	In general, I am not upset very long about (..) opportunity.	FGA	.63			.59	1	9	0
16	I adapt quite easily to changes in plans or circumstances.	FGA	.68			.61	1	9	0
17	I usually find something positive even when giving up something I cherish.	FGA	.67			.66	0	10	0
19	I usually have no difficulties in recognizing (..) my limits are.	FGA	.51			.47	7	2	1
21	After a serious drawback, I soon turn to new tasks.	FGA	.51			.55	1	8	1
23	If I don't get something I want, I take it with patience. [a]	FGA	.49			.44	5	4	1
24	Faced with a disappointment, (..) other things in life are just as important.	FGA	.70			.63	1	9	0
25	I find that even life's troubles have their bright side.	FGA	.73			.70	1	9	0
29	When I get into serious trouble (..) the best out of situation	FGA	.58			.64	4	6	0
01	When I get stuck (..), it's hard for me to find a new approach.	FGA*	.53		.58		1	8	1
13	I create many problems (..) because of my high demands.	FGA*	.43		.35		5	3	2
26	It is very difficult for me to accept a setback or defeat.	FGA*	.42		.37		2	7	1
30	I'm never really satisfied unless things measure up to my wishes exactly.	FGA*	.23		.25		2	2	6

+ direct coded, - reverse coded; * Reverse coded item; [a] Content of item in German, used for Dutch translation: Wenn ich nicht bekomme, was ich will, sehe ich das auch as eine Möglichkeit, mich in Gelassenheit zu üben..

Table 8.2 *Continued*

No.		Scale	Factor loadings CFA				Face validity		
			Model 2		Model 3		uncertain	certain	
			FGA	TGP	-	+		correct	incorrect
02	The harder the goal is (..), the more appeal it has to me.	TGP		.37		.32	1	8	1
03	I can be very obstinate in pursuing my goals.	TGP		.27		.09	4	5	1
05	When faced with obstacles, I usually double my efforts.	TGP		.41		.55	0	10	0
07	(..) things seem hopeless, I keep on fighting to reach my goals	TGP		.39		.46	3	6	1
27	Even when a situation seems hopeless, I still try to master it.	TGP		.32		.53	1	8	1
28	I stick to my goals and projects even in face of great difficulties.	TGP		.36		.39	1	9	0
06	To avoid disappointments, I don't set my goals too high	TGP*		.47	.46		2	6	2
09	I tend to lose interest (..) where I cannot keep up with others.	TGP*		.55	.62		3	7	0
10	I find it easy to give up on a goal if it seems difficult to achieve.	TGP*		.50	.52		3	4	3
11	(…) insurmountable obstacles, I prefer to look for a new goal.	TGP*		.71	.75		2	2	6
12	Life is much more pleasurable (..) not expect too much from it.	TGP*		.61	.66		5	3	2
14	(…) tried hard but can not solve a problem, (…) easy (…) leave it unsolved.	TGP*		.05	.09		5	5	0
18	I avoid grappling with problems for which I have no solution.	TGP*		.48	.43		5	5	0
20	(…) can not reach a goal, (…) change my goal than to keep struggling.	TGP*		.60	.54		4	4	2
22	Faced with a serious problem (..) simply pay no attention to it.	TGP*		.48	.48		5	5	0

+ direct coded, - reverse coded; * Reverse coded item;

Table 8.3 *Multitrait multimethod matrix*

	FGA direct	TGP direct	FGA reverse	TGP reverse
FGA direct	1.00			
TGP direct	*.42***	1.00		
FGA reverse	**.45****	-.06	1.00	
TGP reverse	.11**	**.25****	*.33***	1.00

* p < .05, ** p < .01

and 29. Of the 4 reverse coded FGA items, item 13 and item 30 were problematic. To illustrate, 6 raters falsely classified item 30 as TGP.

Similar to direct coded FGA items, most raters classified the direct coded TGP items correctly and with sufficient certainty, although item 3 and 7 posed difficulties. More raters were however uncertain about the reverse coded TGP items (item 12, 14, 18, 20, 22) and some raters even classified reverse coded TGP items as FGA with sufficient certainty (item 6, 10, 11, 12, 20). In sum, these ratings suggest that the direct coded items of both scales generally had the highest face validity.

8.4 Discussion

Since 1990, the flexible goal adjustment (FGA) and tenacious goal pursuit (TGP) scales have been used regularly by researchers interested in how people deal with blocked goals over the life span. To interpret the findings of these studies and to further test the theory's premises, a valid instrument is crucial. Unfortunately, the current study could not confirm the validity of the scales.

First of all, *factorial* validity was not supported. Even though the original two factor structure fitted better than a model assuming one coping dimension, it did not fit well and even somewhat worse than a two factor model based on item keying. In line with earlier findings (Mueller & Kim, 2004), the direction in which the items were formulated explained the same amount of variance in items scores as coping content. Second, and related, the multitrait, multimethod matrix did not support *convergent* nor *divergent* validity, i.e. groups of items with similar coping content correlated just as strongly as groups of items that were similarly keyed. Numerous studies have reported that items with the same keying within one scale tend to cluster (Spector, van Katwyk, Brannick, & Chen, 1997; Marsh, 1996; Kelloway & Barling, 1990). Apparently, people respond differently to reverse keyed items than to direct keyed items. In the current study, this *method* of measurement was just as important as *what was* being measured (Streiner & Norman, 2008, page 265), indicating that the distinction between flexibility and tenacity is rather subtle. Third, *face validity* of particularly the reverse coded items appeared to be weak, i.e. raters were rather uncertain about the reverse coded

flexibility items and often classified reverse coded tenacity items as flexibility. For example, 6 out of the 10 raters were (reasonably) certain that TGP item 11, i.e. 'when I run up against insurmountable obstacles, I prefer to look for a new goal' reflected flexibility.

We believe that the lack of validity has it's origins not in item construction, but in concept definition (Brandtstädter & Renner, 1990). The tendency 'to give up readily' (opposite pole of TGP) is hard to distinguish from the tendency to 'relinquish blocked goal perspectives easily' (part of FGA); and both seem opposites of the 'difficulty or reluctance in withdrawing emotionally from barren commitments' (opposite pole of FGA) and the tendency 'to tenaciously pursue goals even in the face of obstacles and under high risk of failure' (TGP). Only the tendency 'to positively reinterpret initially aversive situations' (part of FGA) seems clearly distinctive from TGP. The overlap in definitions causes problems not only when classifying items, but also when imagining real-life situations in which people pursue or let go of goals. For example, suppose Andrew's goal is to run the marathon for the very first time. Unfortunately, he catches a serious flu a week in advance. What if Andrew decides to try and run the marathon anyway? Does this response reflect tenacity or a lack of flexibility?

From what we have learned from the literature on the two coping modes (a clear overview of the theory is provided by Boerner & Jopp, 2007), we believe the answer depends on the attainability of the goal. The activation of either accommodative or assimilative processes when confronted with blocked goals depends in large part on goal attainability, which is determined by both the nature of the blocked goal (e.g., whether or not it concerns a permanent loss or constraint) as well as of the individual's resources required to reach the goal (e.g., time, energy, social support, assistive devices etc.). Goal attainability is hard to establish with certainty in this example, as well as in most real life situations, and will often depend on individual appraisal. Moreover, other factors also determine the activation of either an accommodative or an assimilative coping mode, like the perceived importance of the goal (Brandtstädter & Renner, 1990). Nevertheless, we believe the definition of the two coping concepts could gain in clarity if tenacity would refer to how one generally deals with *goals that are not easily reached* and flexibility to how one generally deals with *goals that are not or no longer attainable*. In the definition of flexibility as the 'tendency to relinquish unattainable goal perspectives easily', it should be stressed that this is done '*by* positively reinterpreting initially aversive situations'. Only then the definition clearly reflects an accommodation of personal preferences to fit with circumstances.

In line with these adjusted definitions, the instrument could be improved by introducing flexibility items with the phrase '*When it turns out I can not or no longer reach my goal or get something I want, I usually...*'. This phrase could then be complemented with items that reflect accommodation, like 'find it easy to see something positive' or 'realize that other things in life are more important'.

Similarly, tenacity items could be introduced with *'When reaching my goal or getting something I want is difficult, I usually…'*, and could then be complemented with items that reflect assimilation, like 'double my efforts' or 'try different ways to reach my goal'.

Several aspects of this study warrant discussion. First of all, as we made use of a self-developed Dutch translation of the instrument, we can not be certain our conclusions pertain to the German or English version. Yet, as our results confirm the findings of Mueller & Kim (Mueller & Kim, 2004), language does not seem to have influenced the results. Nevertheless, we do encourage researchers to replicate our study using different versions. A second possible limitation of this study is that our sample consisted of women only. Although we have no reason to assume that results would turn out differently in a sample that includes men, we can not rule out this possibility.

In sum, the study findings did not support the validity of the flexible goal adjustment and tenacious goal pursuit scales. In our opinion, this lack of validity has it's origins not in item construction, but in concept definition. The definitions of flexibility and tenacity might be improved by including goal attainability, i.e. whether the goal is just difficult or completely out of reach. Moreover, the difference between reaching a fit by either changing the circumstances or by changing personal preferences should be stressed. Based on these findings, we gave some suggestions for a revision of the definitions as well as the instrument. We would like to invite researchers working with the dual process theory of self-regulation to take these suggestions into account and we hope our findings encourage them to rethink the way of defining and measuring the two coping tendencies.

Reference List

Bak, P. M. & Brandtstädter, J. (1998). Flexible Zielanpassung und hartnäckige Zielverfolgung als Bewältigungsressourcen: Hinweise auf ein Regulationsdilemma. *Zeitschrift für Psychologie, 206,* 235-249.

Baltes, M. M. & Baltes, P. B. (1986). *The psychology of control and aging*. Hillsdale, NJ: Lawrence Erlbaum.

Boerner, K. (2004). Adaptation to disability among middle-aged and older adults: The role of assimilative and accommodative coping. *The Journals Of Gerontology.Series B, Psychological Sciences And Social Sciences, 59,* 35-42.

Boerner, K. & Jopp, D. (2007). Improvement/maintenance and reorientation as central features of coping with major life change and loss: Contributions of three life-span theories. *Human Development, 50,* 171-195.

Brandtstädter, J. & Renner, G. (1990). Tenacious goal pursuit and flexible goal adjustment: Explication and age-related analysis of assimilative and accommodative strategies of coping. *Psychology & Aging, 5,* 58-67.

Brandtstädter, J. & Rothermund, K. (1994). Self-percepts of control in middle and later adulthood: Buffering losses by rescaling goals. *Psychology & Aging, 9,* 265-273.

Brandtstädter, J., Wentura, D., & Greve, W. (1993). Adaptive resources of the aging self: Outlines of an emergent perspective. *International Journal of Behavioral Development, 16,* 323-349.

Campbell, D. T. & Fiske, D. W. (1959). Convergent and discriminant validation by the Multitrait-Multimethod Matrix. *Psychological Bulletin, 56,* 81-105.

Frazier, L. D., Newman, F. L., & Jaccard, J. (2007). Psychosocial outcomes in later life: A multivariate model. *Psychology and Aging, 22,* 676-689.

Fung, H., Abeles, R., & Carstensen, L. L. (1999). Psychological control in later life: Implications for life-span development. In J.Brandtstädter & R. Lerner (Eds.), *Action & self-development: Theory and research through the life span* (pp. 345-372). Sage Publications, Inc.

Heckhausen, J. (1997). Developmental regulation across adulthood: Primary and secondary control of age-related challenges. *Developmental Psychology, 33,* 176-187.

Heyl, V., Wahl, H. W., & Mollenkopf, H. (2007). Affective well-being in old age: The role of tenacious goal pursuit and flexible goal adjustment. *European Psychologist, 12,* 119-129.

Kelloway, E. K. & Barling, J. (1990). Item content versus item wording: Disentangling role conflict and role ambiguity. *Journal of Applied Psychology, 75,* 738-742.

Marsh, H. (1996). Positive and negative global self-esteem: A substantively meaningful distinction or artifactors? *Journal of Personality and Social Psychology, 70,* 810-819.

Mueller, D. & Kim, K. (2004). The Tenacious Goal Pursuit and Flexible Goal Adjustment scales: Examination of their validity. *Educational and Psychological Measurement, 64,* 120-142.

Poderico, C., Ruggiero, G., Iachini, T., & Iavarone, A. (2006). Coping strategies and cognitive functioning in elderly people from a rural community in Italy. *Psychological Reports, 98,* 159-168.

Poulin, M., Haase, C., & Heckhausen, J. (2005). Engagement and disengagement across the life span: An analysis of two-process models of developmental regulation. In W.Greve, K. Rothermund, & D. Wentura (Eds.), *The adaptive self: Personal continuity and intentional self-development* (pp. 117-135). Göttingen/New York: Hogrefe.

Preiser, S., Auth, A., & Buttkewitz, S. (2005). Bewältigung von Lebensenttäuschungen – Innere und äußere Ressourcen. *Zeitschrift für Psychologie, 213,* 34-43.

Rodin, J. (1986). Aging and health: Effects of the sense of control. *Science, 233,* 1271-1276.

Rothermund, K. (2006). Hanging on and letting go in the pursuit of health goals: Psychological mechanisms to cope with a regulatory dilemma. In D.de Ridder & J. de Wit (Eds.), *Sef-regulation in health behaviour* (pp. 217-241). Chichester, UK: Wiley.

Rothermund, K. & Brandtstädter, J. (2003). Coping with deficits and losses in later life: From compensatory action to accommodation. *Psychology & Aging, 18,* 896-905.

Schmitz, U., Saile, H., & Nilges, P. (1996). Coping with chronic pain: Flexible goal adjustment as an interactive buffer against pain-related distress. *Pain, 67,* 41-51.

Slangen-de Kort, Y. A., Midden, C. J. H., Aarts, H., & van Wagenberg, F. (2001). Determinants of adaptive behavior among older persons: self-efficacy, importance, and personal dispositions as directive mechanisms. *International Journal Of Aging & Human Development, 53,* 253-274.

Spector, P., van Katwyk, P., Brannick, M., & Chen, P. (1997). When two factors don't reflect two constructs: How item characteristics can produce artifactual factors. *Journal of Management, 23,* 659-677.

Streiner, D. L. & Norman, G. R. (2008). *Health measurement scales. A practical guide to their development and use. Fourth edition.* New York: Oxford University Press.

Van Damme, S., Crombez, G., Goubert, L., & Eccleston, C. (2009). Current issues and new directions in 'Psychology and Health': The costs and benefits of self-regulation - a call for experimental research. *Psychology & Health, 24,* 367-371.

Wahl, H., Becker, S., Schilling, O., Burmedi, D., & Himmelsbach, I. (2005). Primary and secondary control versus tenacious goal pursuit and flexible goal adjustment. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie, 37,* 57-68.

Wrosch, C. & Freund, A. (2001). Self-regulation of normative and non-normative developmental challenges. *Human Development, 44,* 264-283.